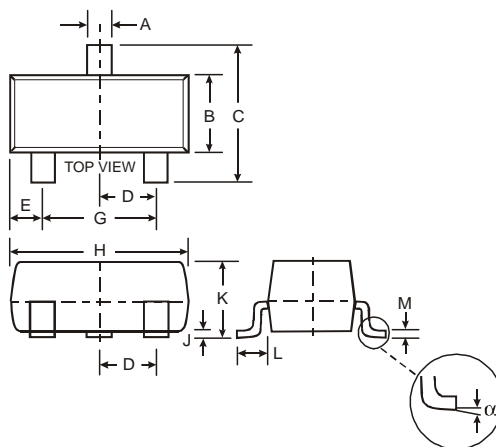


Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1≠R2
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1 and 2)**

Mechanical Data

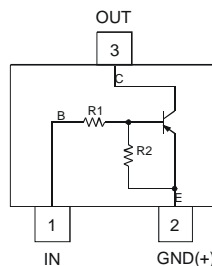
- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking and Date Code: See Table Below & Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)



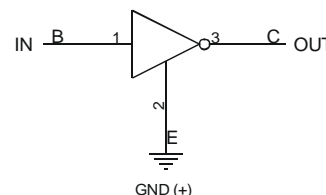
SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°

All Dimensions in mm

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDTA113ZCA	1K Ω	10K Ω	P02
DDTA123YCA	2.2K Ω	10K Ω	P05
DDTA123JCA	2.2K Ω	47K Ω	P06
DDTA143XCA	4.7K Ω	10K Ω	P09
DDTA143FCA	4.7K Ω	22K Ω	P10
DDTA143ZCA	4.7K Ω	47K Ω	P11
DDTA114YCA	10K Ω	47K Ω	P14
DDTA114WCA	10K Ω	4.7K Ω	P15
DDTA124XCA	22K Ω	47K Ω	P18
DDTA144VCA	47K Ω	10K Ω	P21
DDTA144WCA	47K Ω	22K Ω	P22



Schematic and Pin Configuration



Equivalent Inverter Circuit

Maximum Ratings @_{TA} = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V_{CC}	-50	V
Input Voltage, (1) to (2)	V_{IN}	+5 to -10 +5 to -12 +5 to -12 +7 to -20 +6 to -30 +5 to -30 +6 to -40 +10 to -30 +10 to -40 +15 to -40 +10 to -40	V
Output Current	I_O	-100 -100 -100 -100 -100 -100 -70 -100 -50 -30 -30	mA
Output Current	I_C (Max)	-100	mA

Notes: 1. No purposefully added lead. Halogen and Antimony Free.
2. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation	P_d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 3)	$R_{\theta JA}$	625	$^{\circ}C/W$
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	$^{\circ}C$

Notes: 3. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics @ $T_A = 25^{\circ}C$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	$V_{I(off)}$	-0.3			V	$V_{CC} = 5V, I_O = 100\mu A$
		-0.3				
		-0.5				
		-0.3				
		-0.3				
		-0.5	—	—		
		-0.3				
		-0.8				
		-0.4				
		-1.0				
		-0.8				
Input Voltage	$V_{I(on)}$			-3.0	V	$V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -5mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -3mA$ $V_O = -0.3V, I_O = -5mA$ $V_O = -0.3V, I_O = -1mA$ $V_O = -0.3V, I_O = -2mA$ $V_O = -0.3V, I_O = -2mA$ $V_O = -0.3V, I_O = -2mA$ $V_O = -0.3V, I_O = -2mA$
				-3.0		
				-1.1		
				-2.5		
				-1.3		
			—	—		
				-1.3		
				-1.4		
				-3.0		
				-2.5		
				-5.0		
		-4.0				
Output Voltage	$V_{O(on)}$	—	-0.1	-0.3	V	$I_O/I_I = -5mA/-0.25mA$ DDTA123JCA $I_O/I_I = -5mA/-0.25mA$ DDTA143ZCA $I_O/I_I = -5mA/-0.25mA$ DDTA114YCA $I_O/I_I = -10mA/-0.5mA$ All Others
Input Current	I_I			-7.2	mA	$V_I = -5V$
				-3.8		
				-3.6		
				-1.8		
				-1.8		
			—	—		
				-1.8		
				-0.88		
				-0.88		
				-0.36		
				-0.16		
		-0.16				
Output Current	$I_{O(off)}$	—	—	-0.5	μA	$V_{CC} = -50V, V_I = 0V$
DC Current Gain	G_I	-33			—	$V_O = -5V, I_O = -10mA$
		-33				
		-80				
		-30				
		-68				
		-80	—	—		
		-68				
		-24				
		-68				
		-33				
		-56				
Input Resistor Tolerance	ΔR_1	-30	—	+30	%	—
Resistance Ratio Tolerance	$\Delta R_2/R_1$	-20	—	+20	%	—
Gain-Bandwidth Product*	f_T	—	250	—	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$

* Transistor - For Reference Only

Typical Curves –DDTA123JCA

NEW PRODUCT

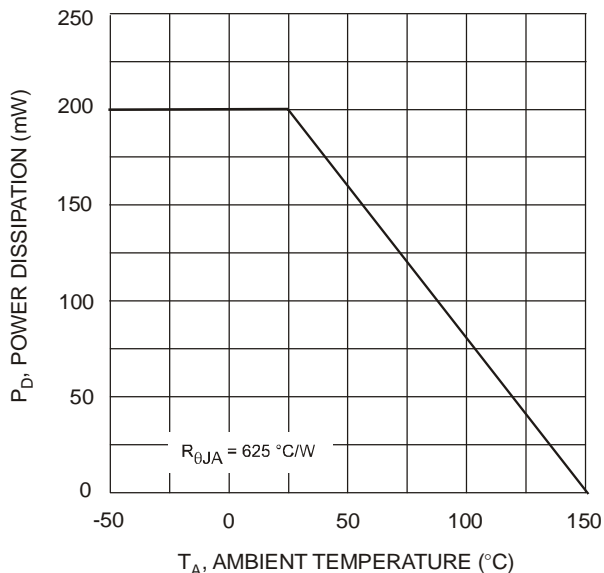


Fig. 1 Derating Curve

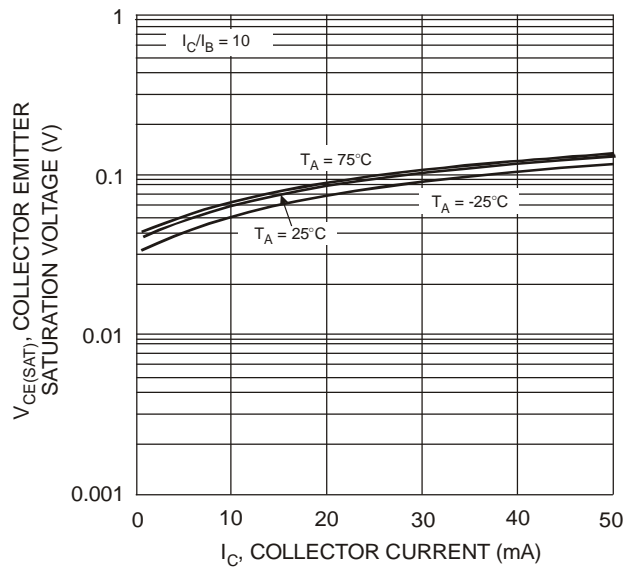


Fig. 2 $V_{CE(SAT)}$ vs. I_C

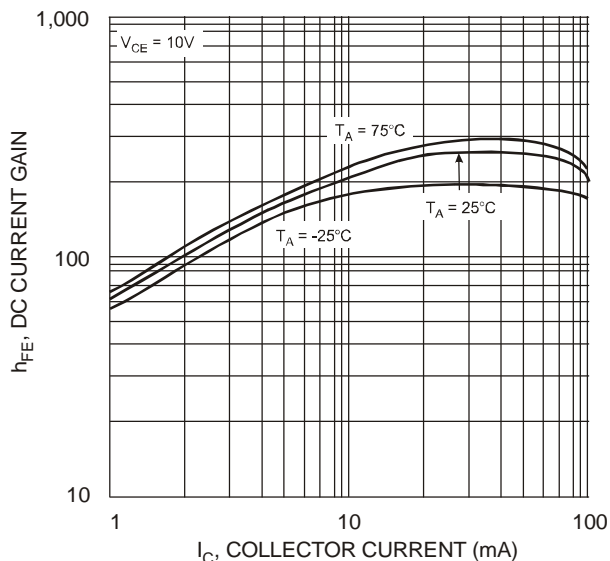


Fig. 3 DC Current Gain

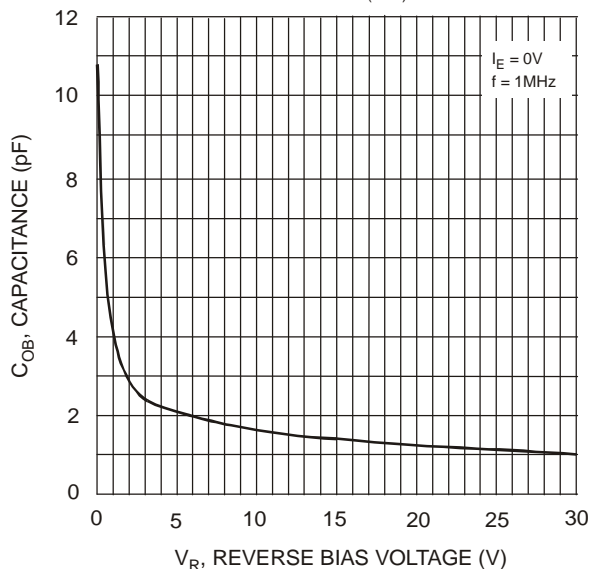


Fig. 4 Output Capacitance

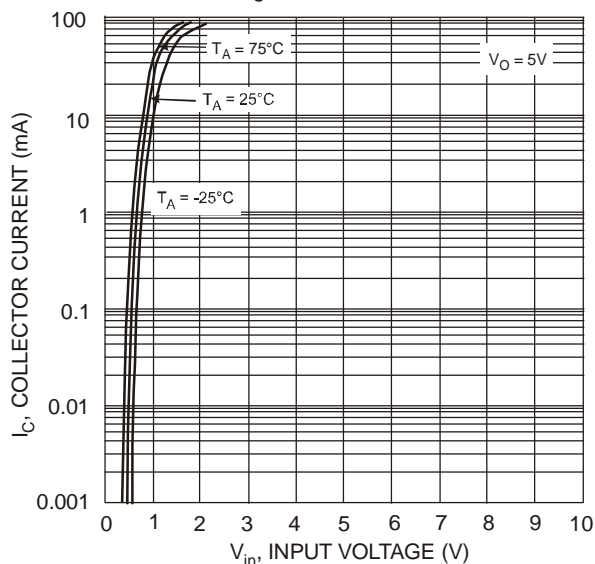


Fig. 5 Collector Current vs. Input Voltage

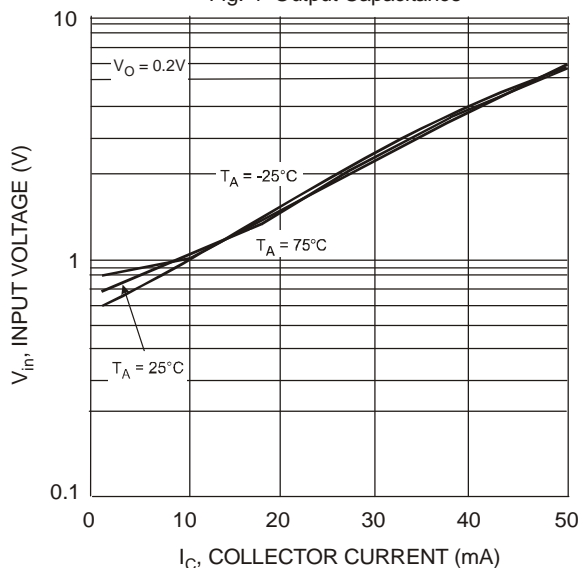
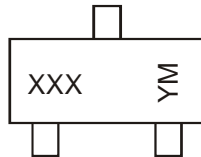


Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Note 4)

Device	Packaging	Shipping
DDTA113ZCA-7-F	SOT-23	3000/Tape & Reel
DDTA123YCA-7-F	SOT-23	3000/Tape & Reel
DDTA123JCA-7-F	SOT-23	3000/Tape & Reel
DDTA143XCA-7-F	SOT-23	3000/Tape & Reel
DDTA143FCA-7-F	SOT-23	3000/Tape & Reel
DDTA143ZCA-7-F	SOT-23	3000/Tape & Reel
DDTA114YCA-7-F	SOT-23	3000/Tape & Reel
DDTA114WCA-7-F	SOT-23	3000/Tape & Reel
DDTA124XCA-7-F	SOT-23	3000/Tape & Reel
DDTA144VCA-7-F	SOT-23	3000/Tape & Reel
DDTA144WCA-7-F	SOT-23	3000/Tape & Reel

Notes: 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information


XXX = Product Type Marking Code, See Table on Page 1
 YM = Date Code Marking
 Y = Year ex: T = 2006
 M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	R	S	T	U	V	W	X	Y	Z

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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